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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/539,357	03/31/2000	Eric D. Brill	MS1-471US	1285

22801 7590 10/04/2004

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EXAMINER
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SCHLAIFER, JONATHAN D

ART UNIT	PAPER NUMBER
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2178

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/539,357

Applicant(s)

BRILL ET AL.

Examiner

Jonathan D. Schlaifer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-57 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. This action is responsive to communications: Amendment filed on 1/16/2004.
2. Claims 1-57 are pending in this case. Claims 1, 10, 17, 23, 30, 35, 40, 49, 54 are independent claims
3. Claims 1-4, 40-43, 45, and 49-51 have been amended.
4. The claim objections to 45, 49, and 51 are withdrawn as necessitated by amendment.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1-34 and 40-57 are rejected under 35 U.S.C. 102(b) as being anticipated by Church (USPN 5,572,423—filed 1/23/1995).**
6. **Regarding independent claim 1**, Figure 1 of Church discloses a method comprising:  
receiving an entered string (see column 4, line 67 “acress); and determining how likely a work (see column 5 line 1 “actress”) was to have been entered as the string based on the least one edit operation {Pr(acress/actress)=del[c,t]/;charts[c/t]} that converts one of multiple character sequences of arbitrary length [actress = 7] (the sequences in Church appear multiple times in the corpus) in the word to one of multiple character sequences [acress = 6] of arbitrary length in the string (see column 5 line 12).
7. **Regarding dependent claim 2**, Figure 1 of Church further discloses the character sequence in the word has a first length [actress = 7] and the character sequence in the

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string has a second length [acress = 6] that is different than the first length [6 is different from 7].

8. **Regarding dependent claim 3**, Figure 1 of Church discloses the character sequence in the word has multiple characters [actress = 7] and the character sequence in the string has multiple characters [acress = 6].
9. **Regarding dependent claim 4**, Figure 1 of Church further discloses that the character sequence in the word has a first number of multiple characters [actress = 7 characters] and the character sequence in the string has a second number of multiple characters [acress = 6 characters] that is different from the first number of multiple characters.
10. **Regarding dependent claim 5**, Figure 1 of Church discloses a method further comprising determining how likely the word is to have been generated (see column 3, lines 47-53).
11. **Regarding dependent claim 6**, Church discloses further comprising conditioning the edit operation on a position that the edit occurs at within the word (see column 5 lines 12-13 [delete t after c in the word “actress” to match the word “acress”])
12. **Regarding dependent claim 7**, Figure 1 (step 11) of Church discloses a method further comprising identifying the string as potentially incorrect.
13. **Regarding dependent claim 8**, Figure 1 (step 16) of Church discloses a method further comprising correcting the string to the word.
14. **Regarding dependent claim 9**, Church discloses a computer readable medium have computer-executable instructions that, when executed on a processor, perform the method as recited in claim 1 (see col. 6, lines 1-6).

15. **Regarding independent claim 10**, Church discloses a method comprising: receiving an entered string [acress]; and determining a probability  $P(s \setminus w)$  (see col. 5, line 12) expressing how likely a word  $w$  was to have been incorrectly entered as the string  $s$  based on one or more edit operations that convert first arbitrary-length character sequences [actress = 7] in the word  $w$  to corresponding second arbitrary-length character sequences [acress = 6] in the string  $s$ , wherein:  $P(s \setminus w) = P(\text{acress}/\text{actress})$ .
16. **Regarding dependent claim 11**, the claim incorporates substantially similar subject matter as claim 2, and is rejected along the same rationale.
17. **Regarding dependent claim 12**, the claim incorporates substantially similar subject matter as claim 5, and is rejected along the same rationale.
18. **Regarding dependent claim 13**, the claim incorporates substantially similar subject matter as claim 6, and is rejected along the same rationale.
19. **Regarding dependent claim 14**, the claim incorporates substantially similar subject matter as claim 8, and is rejected along the same rationale.
20. **Regarding dependent claim 15**, the claim incorporates substantially similar subject matter as claim 7, and is rejected along the same rationale.
21. **Regarding dependent claim 16**, the claim incorporates substantially similar subject matter as claim 9, and is rejected along the same rationale.
22. **Regarding independent claim 17 and dependent claims 18-22**, Church as applied to claims 1-9 and 10-16 above, discloses every aspect of applicant's claimed invention except for not explicitly disclosing partitioning of the probability function in the misspelled word and candidate word. However Church discloses the computing

probabilities  $P(\text{acress/actress})$  which is identical to the present invention  $P(\text{string/word})$ .

Therefore the computing probabilities' outcome of Church and the claimed invention are the same.

23. **Regarding independent claim 23 and dependent claims 24-29**, Church as applied to claims 17-22 above discloses a probability  $P(\text{acress/actress})$  which is identical to the invention claim's  $P(\text{s/w})$ , and Church not explicitly discloses partitioning the word  $w$ , and  $T$  and computing probabilities for various partitionings, but the outcome of the claimed invention and the reference are the same computing probabilities  $P(\text{s/w})$ . Therefore the claims incorporate substantially similar subject matter as claims 17-22 and are rejected along the same rationale.
24. **Regarding independent claim 30 and dependent claims 31-34**, the claims incorporate substantially similar subject matter as claims 17-22 and are rejected along the same rationale.
25. **Regarding independent claim 40 and dependent claims 41-44**, the claims incorporate substantially similar subject matter as claims 1-5, and is rejected along the same rationale.
26. **Regarding independent claim 45**, Figure 1 of Church discloses further comprising computer executable instructions that directs a computer to perform, depending upon how likely an expected string was to be incorrectly entered as the entered string, one of:  
leaving the entered string unchanged, autocorrectin the entered string into the expected string, or offering a list of possible corrections (see column 4, lines 54-61).

27. **Regarding dependent claims 46-48**, Column 6, lines 1-42 of Church discloses a computer-readable medium comprising the program of claim 40.
28. **Regarding independent claim 49**, Church discloses a program embodied on a computer readable medium, which when executed, directs a computer to perform the following: (a) receive an entered string  $s$  [acress]; (b) for multiple words  $w$  [actress] in a dictionary, determine: how like a word  $w$  in a dictionary is to have been generated,  $P(w/context)$  (see column 5, lines 1-6, also see column 3, lines 47-48); and how likely the word  $w$  was to have been entered as the string  $s$ ,  $P(s/w)$ , based on at least one edit operation that converts one of multiple character sequences of arbitrary length in the word to one of multiple character sequences of arbitrary length in the string; and maximize  $P(s|w)*P(w/context)$  to identify which of the words is most likely the word intended when the string  $s$  was entered (see column 4, lines 42-53).
29. **Regarding dependent claim 50**, Church discloses the determination is performed for all words in the dictionary (see column 5 line 5).
30. **Regarding dependent claim 51**, (Figure 1, [16]) of Church discloses a program further comprising computer-executable instructions that directs a computer to perform one of leaving the string unchanged, autocorrecting the string into the word, or offering a list of possible corrections.
31. **Regarding dependent claims 52-53**, Church discloses a computer-readable medium, comprising the program of claim 49 (see column 6, line 1).
32. **Regarding independent claim 54**, Church discloses a spell checker comprising: a source model component to determine how likely a word  $w$  in a dictionary is to have been

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generated (see column 5, lines 1-6); and an error model component to determine how likely the word w was to have been incorrectly entered as the string s based on arbitrary length string-to-string transformations (see column 3, lines 47-58).

33. **Regarding dependent claim 55**, the claim incorporates substantially similar subject matter as claim 2, and is rejected along the same rationale.
34. **Regarding dependent claim 56**, the claim incorporates substantially similar subject matter as claim 3, and is rejected along the same rationale.
35. **Regarding dependent claim 57**, the claim incorporates substantially similar subject matter as claim 4, and is rejected along the same rationale.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

36. **Claims 35-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Potter (USPN 6,131,102—filing date 1/15/1998), in view of Church (USPN 5,572,423—1/23/1995).**
37. **Regarding independent claim 35**, Figure 5A of Potter discloses “<wrong, right> training pair and multiple single character edits that convert characters in one of the right or wrong strings to characters in the other of the right or wrong string at differing costs, an alignment of the wrong string and the right string that results is a least cost to convert



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the characters (see column 9, lines 46-57); It is noted that Potter does not explicitly disclose collapsing an contiguous non-match edits into one or more common error regions, each error region containing one or more characters that can be converted to one or more other characters using a substitutions edit and computing a probability for each substitution edit. However, refer to Church Table D discloses computing a probability for each substitution edit (see example D-E, table D). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the inventions of Potter and Church in arriving at the instant invention because such combination would facilitate the computing of probability.

38. **Regarding dependent claim 36**, Figure 4 of Potter discloses the assigning comprises assessing a cost of 0 to all match edits and a cost of 1 to all non-match edits (see column 7, lines 27-31, and lines 54-55).
39. **Regarding dependent claim 37**, Church discloses the single character edits comprises insertion, deletion, and substitution (see table D).
40. **Regarding dependent claim 38**, Figure 5A of Potter discloses further comprising collecting multiple <wrong, right> training pairs from online resources.
41. **Regarding dependent claim 39**, Church discloses further comprising expanding each of the error regions to capture at least one character on at least one side of the error region (see column 5 lines 12-13, and table D).

***Response to Amendment***

42. Applicant's arguments filed 1/16/2004 have been fully considered but they are not persuasive.

43. With respect to claims 1 and 2-9, as well as 40 and 41-48, applicant refers to converting *one of multiple* character sequences of arbitrary length in a word to *one of multiple* character sequences of arbitrary length in an entered string. However, in column 5 line 16, Church refers to multiple occurrences of the character sequence in question in the corpus, which satisfies the limitation of the claim
44. With respect to claims 10 and 11-16, applicant alleges that not all of the limitations are set forth in the Office Action. The Examiner maintains that they are, and refers the Applicant to the Office Action.
45. With respect to claims 17 and 18-22, applicant alleges that not all of the limitations are set forth in the Office Action. The Examiner maintains that they are, and refers the Applicant to the Office Action.
46. With respect to claims 23 and 24-29, applicant alleges that not all of the limitations are set forth in the Office Action. The Examiner maintains that they are, and refers the Applicant to the Office Action.
47. With respect to claims 30 and 31-34, applicant alleges that not all of the limitations are set forth in the Office Action. The Examiner maintains that they are, and refers the Applicant to the Office Action.
48. With respect to claims 49 and 50-53, applicant alleges that not all of the limitations are set forth in the Office Action. The Examiner maintains that they are, and refers the Applicant to the Office Action.
49. With respect to claims 54 and 55-57, applicant alleges that not all of the limitations are set forth in the Office Action. The Examiner maintains that they are, and refers the Applicant to the Office Action.

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50. With respect to claims 35 and 36-39 Church discloses calculating probabilities that would be functionally equivalent to the collapsing limitation that applicant points out is not disclosed.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

USPN 5,258,909 (filing date 8/31/1989)—Damerau et al.

USPN 5,218,536 (filing date 1/2/1990)—McWherter

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan D. Schlaifer whose telephone number is (571) 272-4129. The examiner can normally be reached on 8:30-5:00, M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Hong can be reached on (571) 272-4124. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JS

  
STEPHEN S. HONG  
PRIMARY EXAMINER